Oregon Sustainability Board

Biennial Report

2017-2018

June 2019

DAS | DEPARTMENT OF ADMINISTRATIVE SERVICES

SUSTAINABILITY PROGRAM

Table of Contents

2017-2018 Board Members

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A. About the Board

The Oregon Sustainability Board (OSB) was created in 2001 and encourages activities that best sustain, protect and enhance the environment, economy and community for the present and future benefit of Oregonians. Appointed by the Governor, members represent a variety of stakeholders across the State of Oregon.

The Legislature adopted the Oregon Sustainability Act (ORS 184.421-435), which established the state's overall sustainability policy. This legislation created the OSB and established legislative goals for the Board, and more generally for state government around sustainability. Subsequent executive orders and communications from the Governor have directed the Board to oversee, review and approve sustainability plans developed by state agencies.

The OSB, which meets quarterly, remains actively involved in the oversight of agency sustainability plans and initiatives, as well as statewide projects working to enhance the environment, economy and community.

B. Recap of 2017-18 activities

In 2017-18, the OSB met 8 times, collaborating with multiple state agencies on their sustainability plans and metrics. The OSB also engaged communities in eastern, central and rural Oregon, deepening OSB's understanding and capacity to address social sustainability issues such as equity, and supported two significant special projects with impacts across state government – a material footprinting effort and statewide sustainability survey. Future schedules will include revisiting southern and coastal areas. Taken together, these efforts and projects have led to significant benefits, from elevating the visibility and effectiveness of sustainability across Oregon to tactical actions, resource efficiencies and cost savings across agencies.

The OSB remained short of full capacity in 2017-18, with three position vacancies. In June 2017, however, the OSB gained critical support with

the hiring of a full-time Statewide Sustainability Officer at DAS. Additional staff support from DAS has increased the Board's capacity to engage communities, work effectively with agencies to improve their sustainability performance and take on special projects. Conversely, the Board's guidance and expertise, along with a commitment to operating in a way that minimizes the need for outside resources, is an investment in Oregon's future. The Board's guidance helps make agency operations more resource and cost efficient, while working to protect and enhance Oregon's environment and communities.

C. Reviewing agency sustainability plans

A core activity of the OSB is reviewing, commenting on and ultimately approving agency sustainability plans. A total of 13 agencies presented their new or updated

sustainability plans – or implementation progress reports on existing plans – to the OSB in 2017-18. These plans and the goals, actions and metrics they include are showing impact to not only agency operations, but also to the programs and services these agencies deliver to the people of Oregon. Some highlights from these plans:

- Business Oregon is working to incorporate sustainability into the agency strategic plan and division work plans;
- Department of Corrections met all of its goals from a prior iteration of its Sustainability Plan and created a new five-year Plan;
- State Parks is developing a sustainability chapter for all park master plans;
- Travel Oregon committed in their 2017 Sustainability Plan to infuse sustainability into all of its programs where possible;
- Department of Administrative Services created over 40 new priority strategies to integrate sustainability into planning and construction management, real estate, procurement, fleet and more.

> **Sustainability plan presentations**
>
> <u>2017</u>
>
> Department of Water Resources
> Watershed Enhancement Board
> Department of State Lands
> Department of Housing and Community Services
> State Parks
> Travel Oregon
>
> <u>2018</u>
>
> Public Utilities Commission
> Department of Environmental Quality
> Business Oregon
> Department of Corrections
> Department of Administrative Services
> Department of Transportation
> Department of Forestry

D. Addressing diversity, equity and inclusion

Historically, as the OSB has supported and reviewed agency sustainability plans, agencies have placed a significant emphasis on the environmental pillar of sustainability, with less attention paid to the community/social pillar. Since passage of the Sustainability Act, sustainability as a professional practice has progressed and now integrates an emphasis on social/community issues such as equity and inclusion, in addition to the traditional focus upon environmental aspects.

In 2017-2018, the OSB dedicated a number of meetings to exploring and discovering how to more formally address the social pillar of sustainability in agency sustainability plan guidance. With the Governor's support, the OSB engaged several agencies, Boards and

organizations in this process including the Environmental Justice Task Force (EJTF) in initial collaboration led by Board member David Gremmels.

The OSB also engaged the Governor's Office of Diversity, Equity and Inclusion/Affirmative Action (DEI/AA); Oregon Health Authority's Office of Equity and Inclusion; Multnomah County; and outside organizations such as Beyond Toxics.

This two year learning effort has prepared the OSB for the next phase: the development of processes and tools to support agencies in incorporating social sustainability considerations, such as diversity, equity and inclusion, into their sustainability plans. With its

agency sustainability plan guidance on track for updates in 2019, the time is right for the OSB to continue our collaborative efforts with the complete application of sustainably principles. In November 2018, the OSB drafted and passed a resolution on integrating DEI into sustainability plans (Appendix A).

E. Collaborating on product footprinting

Every product has an environmental "footprint" - the resources used and waste or pollutants released over the life of the product. This includes a product's production, use, and management at end-of-life. The "carbon footprint" is the most common type of footprint, but businesses are exploring other types of footprints as well, addressing issues such as the water used to make products, or the toxic chemicals released over their life.

The OSB collaborated with the Oregon Department of Environmental Quality (DEQ), the State of Washington and an advisory group of stakeholders from across Oregon and Washington to evaluate the potential benefits and challenges inherent in product-level environmental footprinting.

The OSB worked with DEQ to develop four case studies, and conducted more in-depth footprinting analyses of food and concrete. Case studies included:

- Excel Dryer: a comparative product life cycle assessment of high-speed and energy-efficient hand dryers.
- Impossible Foods: evaluating the impact and resource use along the supply chain to help understand the life cycle impacts of plant-based alternatives to meat and dairy products, and document trends in the US food system.

- Hewlett-Packard: an assessment of the environmental benefits and tradeoffs of small-batch digital printing.
- Steelcase: evaluating the life cycle impacts of commercial furniture.

Case study profiles are included in Appendix B.

Food

These studies summarized existing product footprinting literature regarding the environmental impacts of a variety of foods - some of which are produced in Oregon, and others not produced here but consumed in significant quantities in Oregon. This information may be helpful to producers and purchasers working to reduce environmental impacts of foods. The DEQ produced several food study reports for tomatoes, wine, port, land-based aquaculture, beer, coffee and citrus fruits and juices.

Concrete

In partnership with the Oregon Concrete and Aggregate Producers Association, DEQ has made available to all concrete producers in Oregon a tool that allows them to calculate the carbon footprint of each of their different concrete mixes. The State of Oregon is also providing support for verifying these calculations so that they can be shared with customers in a format called an "environmental product declaration." Developing such declarations gives Oregon producers more opportunity to compete in the green building marketplace, particularly for buildings being certified under the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) program.

F. Completing a successful sustainability survey

In 2017 the Oregon Sustainability Board embarked on a project to survey employees

across state government regarding their knowledge, priorities and levels of supportrelated to sustainability. The OSB collaborated with the DAS Sustainability Program, the Governor's Natural Resource Office and the Interagency Sustainability Coordinators Network. DAS worked with OSB to develop survey questions, administer the survey, collect and analyze results and prepare the draft report.

In October 2018, after a year-long effort, the OSB and DAS Sustainability Program published the survey results (Appendix C). Two separate surveys were used.
One survey went out to agency leaders. A follow up survey, incorporating findings from leadership responses, went to a random sample of staff across the enterprise. Over 1,500 people across state agencies responded, giving OSB a robust data set on which to make recommendations.

Survey findings
Overall, the survey showed strong support for sustainability among both agency leadership and staff, prompting the OSB to develop several recommendations. These included supporting staff involvement in their agency's sustainability activities, increasing knowledge on climate change mitigation and adaptation. DAS Sustainability is now coordinating with various agencies and individuals to implement the Board's recommendations, which include enhanced communications and information sharing, focused efforts on climate literacy and resiliency, and revised guidelines and decision support tools for agency sustainability efforts.

The OSB will continue to support these actions and monitor outcomes through its regular engagement with the Governor's Office, DAS Sustainability staff and agency sustainability plans and actions.

G. Revising agency sustainability plan guidelines

In In collaboration with the Interagency Sustainability Coordinators Network (ISCN) – a network of sustainability practitioners across state agencies – in 2018 the OSB began the process of revising its Sustainability Plan Guidelines for agency sustainability plans. The ISCN, which represents several agencies that have or are developing new sustainability plans, provided feedback to the Board on how to improve guidelines to make sustainability plans resourceful, actionable and effective (Appendix D). The Guidelines, last revised in 2013, will be updated to include increased knowledge about sustainability data and metrics, new executive orders and policy guidance from Governor Brown, and guidance for social sustainability topics such as equity. The OSB anticipates working with DAS to issue revised guidelines in 2019.

H. Engaging Oregon's communities

Every calendar year, the OSB commits one of their quarterly meetings to a two-day meeting in an Oregon community to learn about statewide current trends and issues, as well as opportunities for the Board to support sustainability-related efforts.

2017: Boardman and Condon

In In October 2017 the OSB traveled to Boardman and Condon to meet with local representatives and discuss current issues facing these areas. The OSB also toured the Portland General Electric (PGE) Boardman coal-fired plant, the adjacent natural gas plant and the Pacific Power Condon Wind Farm to understand current and future energy challenges and opportunities.

In **Boardman**, the OSB heard from City of Boardman and Morrow County officials about renewable energy, sustainable agriculture and forestry, economic development, transit and housing challenges. The OSB also toured the Port of Morrow facilities and learned about developmental activities such as education and training in the energy industry, agricultural processing, data center growth.

In **Condon**, OSB members and local representatives discussed infrastructure and broadband availability, agricultural and grazing, land stewardship, water issues and housing and energy assistance for low-income residents in the four-county region (Gilliam, Umatilla, Morrow and Wheeler).

Local participants included:

- Jim Doherty, Morrow County Commissioner
- Karen Pettigrew, City Manager, City of Boardman
- Lisa Mittelsdorf, Port of Morrow/Morrow Development Corporation
- Kathryn Greiner, Administrator, City of Condon
- Christine Kirwan, Gilliam County, County Soil and Water Conservation District
- Jordan Maley, OSU Extension, Gilliam County
- Denise Jerome, Community Action Program of East-Central Oregon (CAPECO)

OSB members touring the Boardman coal plant in October 2017.

2018: Bend and Deschutes County

In 2018 Board members traveled to Bend to learn about sustainability-related efforts in Bend and Deschutes County. Members heard from City staff about city operations, community climate action plan efforts, and equity challenges in housing. Staff from OSU Cascades shared efforts to integrate sustainable design into expansion of its campus, including remediation and reclamation of an onsite landfill and pit mine, net zero energy and water goals, and creation of an innovation district on campus for local businesses. The OSB also heard about the efforts of "Move Bend" and "Bend 2030" to address the area's rapid growth and transportation challenges, while the Environmental Center shared their work to engage residents through an energy challenge and other energy efficiency efforts.

Local participants included:

- Gillian Ochner, Cassie Lubenow, City of Bend
- Joshua Romero, City of Bend
- Lindsey Hardy, Climate Action Steering Committee
- Jillian Taylor, Interim Executive Director, Move Bend and Bend 2030
- Mike Riley, Executive Director, The Environmental Center
- Blair Garland, Kelly Sparks, OSU Cascades

I. Looking ahead to 2019 and beyond: Board priorities

The Sustainability Board is well positioned for 2019 and beyond, with the reappointment of three current members and the addition of new member Rex Burkholder. It continues to enhance its relationship with state agencies to support their sustainability efforts and has the opportunity to help the Governor's office advance diversity, equity and inclusion in agency sustainability plans. The Board will be exploring opportunities and setting priorities in 2019 to guide its work over the next biennium. Future meetings in 2019 also include locations in coastal and southern Oregon to engage communities about how the Board can best support them.

Appendix A: Board Diversity, Equity and Inclusion Resolution

Oregon Sustainability Board

Context, history and planned approach: Diversity, equity and inclusion

Context

According to the Oregon Sustainability Act (ORS 184.423), "sustainability" means using, developing and protecting resources in a manner that enables people to meet current needs and provides that future generations can also meet future needs, from the joint perspective of *environmental, economic* and *community* objectives.

Central to the Act are several goals that state agencies shall seek to achieve in support of sustainability. The Act directs the Oregon Sustainability Board (Board) to identify, evaluate, make recommendations and propose legislation, regulatory changes or policy modifications to agencies, the Governor, the Legislative Assembly, private entities or other bodies for the purpose of encouraging activities that best sustain, protect and enhance the quality of the *environment, economy* and *community* for the present and future benefit of Oregonians. The Board shall also develop and promote proposals that *jointly and mutually* enhance *local economies*, the *environment* and *community health* for the present and future benefit of Oregonians.

To carry out the Act, multiple executive orders have directed the Board to support and guide agencies in the creation of sustainability plans. Since 2003, the Board has worked with over 20 agencies to develop and implement such plans.

History

Historically, as the Board has supported and reviewed agency sustainability plans, agencies have placed a significant emphasis on the environmental pillar of sustainability, with less attention paid to the community/social pillars.

Since passage of the Sustainability Act, sustainability as a professional practice has progressed and now integrates an emphasis on social/community issues such as equity and inclusion in addition to the traditional focus upon environmental aspects. This is reflected in several sustainability frameworks such as AASHE STARS (higher education), STAR Communities (local governments), the Global Reporting Initiative (largely corporate emphasis), the Living Future Institute's JUST label, and the EcoDistricts Protocol (neighborhood planning), among others. Individual sustainability and climate action plans, including recent plans by Business Oregon, the Department of Corrections and Department of Administrative Services now address equity and inclusion.

In 2017-2018, the Board dedicated a number of meetings to exploring and discovering how to more formally address the social pillar of sustainability in agency sustainability plan guidance. With the Governor's support, the Board engaged several agencies, Boards and organizations in this process including the Environmental Justice Task Force (EJTF) in initial collaboration led by Board member David Gremmels. The Board also engaged the Governor's Office of Diversity, Equity and Inclusion/Affirmative Action (DEI/AA); Oregon Health Authority's Office of Equity and Inclusion; Multnomah County; and outside organizations such as Beyond Toxics.

Planned Approach

This two year learning effort has prepared the Board for the next phase; the development of processes and tools to support agencies in incorporating social sustainability considerations, such as diversity, equity and inclusion, into their sustainability plans. With its agency sustainability plan guidance due for an update, the time is right for the Board to begin a collaborative effort with the Governor's Office, agencies, the EJTF and other relevant resources to implement a more complete application of sustainably principles.

In the recently completed statewide [Sustainability Survey by the Board with support from the Governor's Office](#), agencies expressed incorporating sustainability into their external programs as a high priority.

Internally, DEI/AA is working with agencies to create work environments that allow every individual the opportunity to reach their full potential as a state employee. The Governor's Office has created the following statements regarding diversity, equity and inclusion (DEI):

> *The Governor's Office recognizes diversity as the collective mixtures of our differences and similarities. The differences are viewed as a strength that maximizes the state's competitive advantage through innovation, effectiveness, and adaptability.*
>
> *Equity is a value and goal, not a process. It allows all individuals to thrive and reach their full potential.*
>
> *Inclusion is leveraging diversity which builds and sustains a culture in which people are engaged and motivated. Ultimately, inclusion is the environment that people create to allow these differences to thrive.*

Agencies are diverse in their missions, programs and organizational cultures. Each will encounter its own set of DEI issues. As a result, rather than creating a one-size-fits-all approach, the Board will provide decision support tools and guidance within a framework that agencies can adapt to their circumstances.

Adopted Resolution

The Board will collaborate with the Governor's office, EJTF, participating agencies and non-governmental organizations, to begin in Q1 2019, the development of DEI guidelines and tools that agencies can use to develop sustainability plans and to evaluate and enhance proposed policies and programs. This will include the development of a lens and toolbox with guiding language and definitions, decision support tools and sample case studies to help pursue the Governor's definitions, set goals and evaluate proposed policies and programs with questions such as, but not limited to:

- How will agencies incorporate DEI into their sustainability plans?
- Who is positively and negatively impacted, and how?
- What are the opportunities and barriers that promote or prevent more equitable outcomes?
- How are public resources and investments distributed geographically?
- Who is meaningfully being included or excluded in decisions?
- How are environmental justice impacts considered?
- How does the policy or program integrate voices and priorities for communities more affected by inequities?
- Would a pilot program help demonstrate the value of addressing DEI in sustainability plans?

The Board will continue to work with the Governor's office and relevant agencies, partners and organizations. The Board will collaborate with the Governor's Natural Resource Office and the Governor's Office of Diversity, Equity, and Inclusion to expand its knowledge and further evaluate opportunities to address diversity, equity (including environmental equity) and inclusion for agency sustainability plans - including scope, standards and potential metrics. The Board will also partner with the EJTF and establish a timeline and specific steps for integrating EJ into agency plans in a manner that complements the work of the EJTF.

APPENDIX B: Statewide Sustainability Survey

Oregon Sustainability Board Sustainability Survey
Phase 1 and 2 Results
October 2018

DAS DEPARTMENT OF ADMINISTRATIVE SERVICES

SUSTAINABILITY PROGRAM

Contents

Phase 1 response rate

27%

73%

Phase 2 response rate

24%

76%
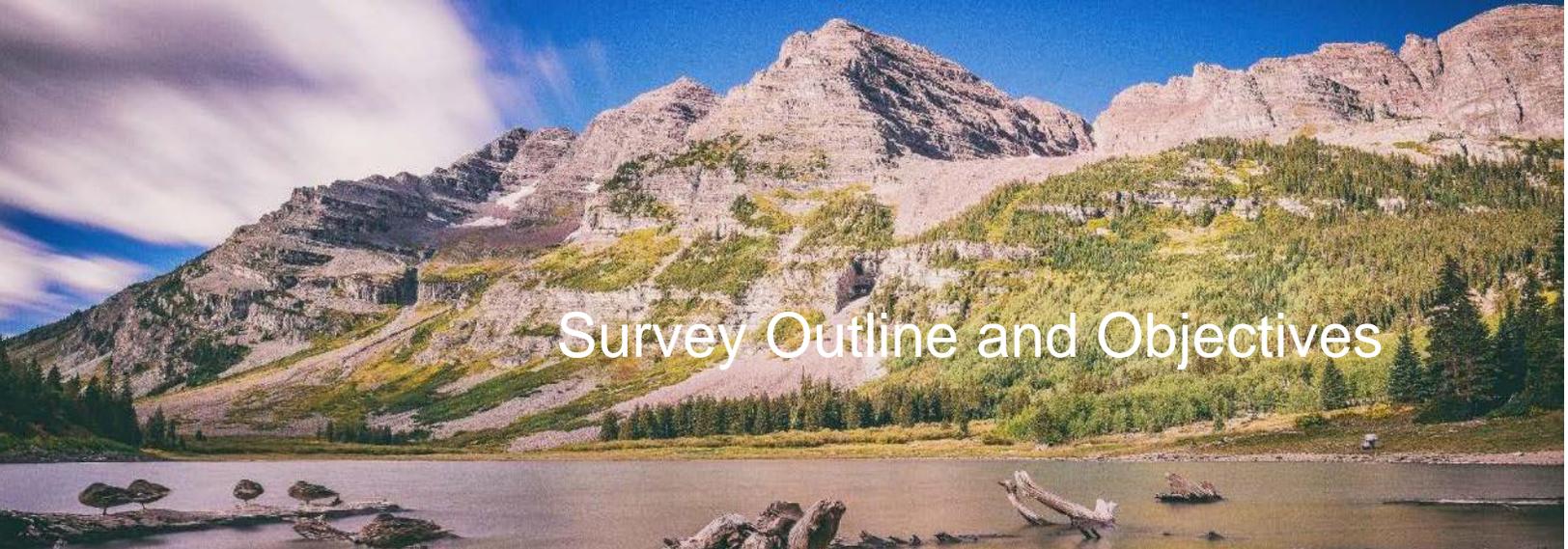
■ Responded   ■ No response
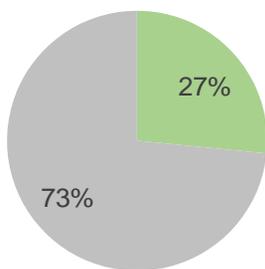
In 2017 the Oregon Sustainability Board embarked on a project to survey employees across state government regarding their knowledge, priorities and levels of support related to sustainability. This survey project entailed collaboration among the Board, the DAS Sustainability Program, the Governor's Natural Resource Office and the Interagency Sustainability Coordinators Network. The results are intended to guide future initiatives and strengthen sustainability programs across the enterprise. The survey effort was launched in two phases, with Phase 1 directed at agency leadership, and Phase 2 at all other staff across state government.

This report summarizes the results from Phase 1 and Phase 2 of the statewide sustainability survey. More specifically, the questions gauged prioritization, levels of awareness, willingness to participate, perceived benefits and impacts, current performance, barriers to success and opportunities for improvement.
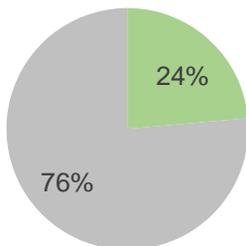
In Phase 1, delivered in fall 2017, 1,126 surveys were distributed to agency leadership through the Governor's office (leadership included staff with salary range 35 and above). This survey included high-level questions about leadership awareness, support, and barriers for sustainability efforts.

Phase 2 went out to 5,225 randomly selected staff (level 34 and below). Phase 2 contained similar question areas as phase 1 and was informed by phase 1 results. It also gauged whether the executive-level feedback from the results of Phase 1 was consistent with employee priorities, sentiment and current level of engagement.

Response Rate:

Phase 1- 299 responses out of 1,126 surveys (27% response rate) distributed to agency leadership. Summary results that include all responses have a 95% confidence level with a 5% margin of error.

Phase 2- 1,233 responses out of 5,225 surveys (24% response rate) sent to a random sample of 20 percent of staff enterprise-wide. Summary results have a 95% confidence level with a 2.75% margin of error.

Response rates for both surveys were significantly higher than the average response rate for statewide surveys managed by DAS (average 15%) which may indicate a high interest in sustainability efforts across the state.

Strategic Prioritization

Across the enterprise staff and leadership believe sustainability should be a strategic priority. Currently, however, staff do not perceive it to be one.

Desired vs. perceived prioritization:

Agency leaders and staff agree sustainability should be a strategic priority for their agencies. About 91% of agency leadership and 93% of employees indicated sustainability should be a high or moderate strategic priority.

There is a gap among staff between desired and perceived prioritization. While 93% of staff believe sustainability should be a moderate or high priority, only 69% of staff think sustainability currently is a moderate or high priority. Breaking out their scores shows further disparity; 36% rated that they think it is a moderate priority and only 33% believe it is a high agency priority.
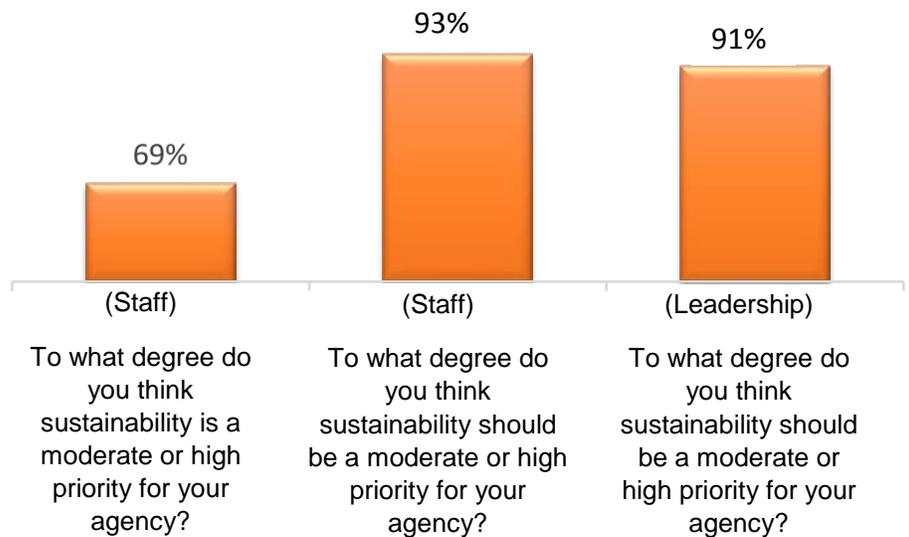
Awareness:

Less than half of staff indicated they were somewhat or very aware of their agencies sustainability efforts. Some comments from staff indicated that awareness at the program level nearest to them was high but awareness at the division or agency level was low.

Interest:

Despite the relatively low awareness, 61% of staff said they were moderately or highly interested in participating in their agency's sustainability efforts.

Staff and Leadership Prioritization

69%	93%	91%
(Staff)	(Staff)	(Leadership)
To what degree do you think sustainability is a moderate or high priority for your agency?	To what degree do you think sustainability should be a moderate or high priority for your agency?	To what degree do you think sustainability should be a moderate or high priority for your agency?

Staff awareness of sustainability efforts

Very aware

Not aware - 27%

Somewhat aware - 33%

Marginally aware - 30%
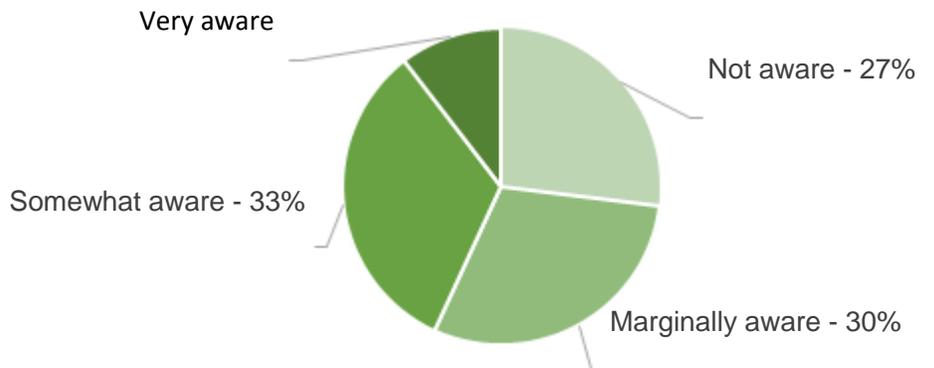
Prioritizing Sustainability Topics and Activities

	Leadership Priorities	Staff Priorities
1	Energy	Energy
2	Waste reduction / recycling	Protecting public health
3	Water	Waste reduction / recycling
4	Transportation	Water
5	Natural resources (land, plants, wildlife)	Procurement (goods and services)
6	Procurement (goods and services)	Toxics reduction
7	Climate change	Natural resources (land, plants, wildlife)
8	Equity / diversity	Transportation
9	Toxics reduction	Climate change

Staff and leadership prioritization:

The summary results of both Phase 1 and Phase 2 surveys shows that leadership and staff shared similar sustainability priorities. Energy, water, and waste reduction were all ranked highest by both staff and leadership. Notable, however, is that staff also rated public health as a high priority. Climate change fell as a low priority for both leadership and staff.

Benefits:[1]

Staff and leadership also agreed on how the agency would benefit from sustainability efforts.

While ordered differently for staff and leadership, the top four ranked benefits/impacts of more focused efforts on sustainability include:

- Preparing and adapting for the future
- Increasing efficiency in the use of resources
- Fulfilling a sense of obligation (the right thing to do)
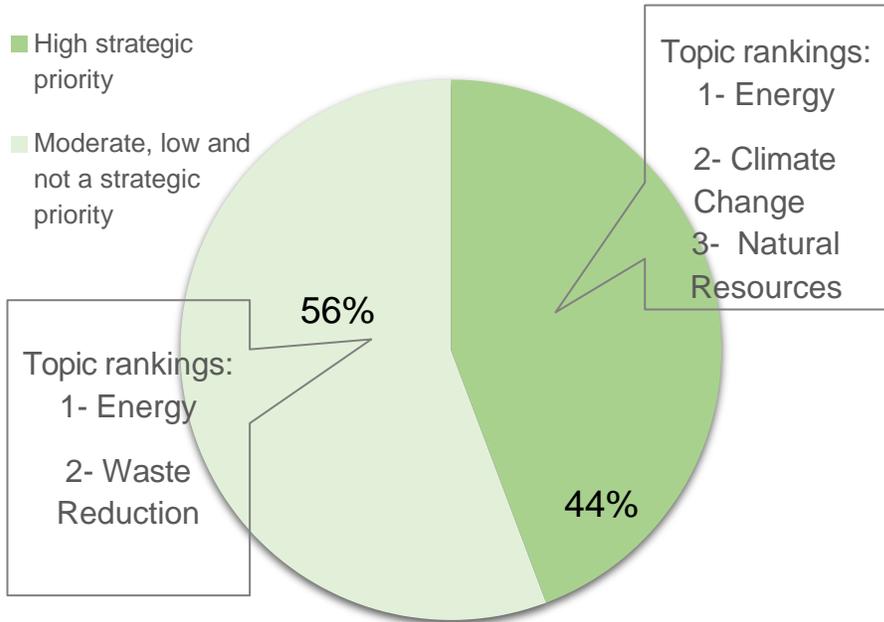- Saving money

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[1] Only the leadership survey included equity/diversity as an option. This was omitted from the staff survey.

Prioritizing Sustainability Topics and Activities

Leadership rating: strategic prioritization and high ranking topics

- ■ High strategic priority
- ■ Moderate, low and not a strategic priority

56%

44%

Topic rankings:
1- Energy
2- Waste Reduction

Topic rankings:
1- Energy
2- Climate Change
3- Natural Resources

Prioritization (continued): There is a difference in topic prioritization between the leaders who rate sustainability as a whole a high priority vs. those rating it as a less important strategic priority.

About 45% of leaders rated sustainability as a high agency priority. This group indicated that energy, climate change, and natural resources are the three most important topics on which to focus.

The 56% of leaders who rated sustainability as a moderate, low, or not a priority ranked energy, waste reduction and procurement as the top three areas on which to focus; in this group, climate change was ranked much lower (8th out of the 9 topic areas).
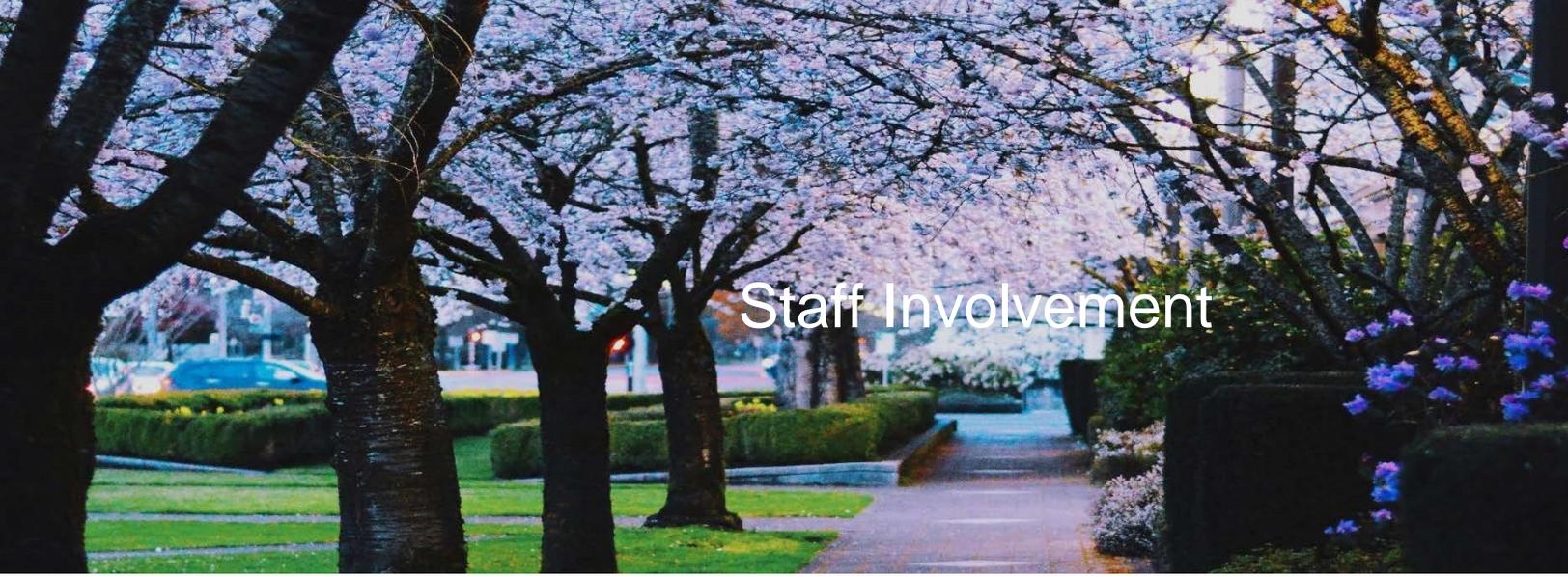
Activities:

Regarding more discrete actions, leadership prioritized the following activities:

1. Managing building resource use (energy, water and waste)
2. Integrating sustainability into agency programs / decisions
3. Providing employee education and training

Updating agency sustainability plans and focusing more on procuring sustainable goods and services also received high rankings compared to other activities.
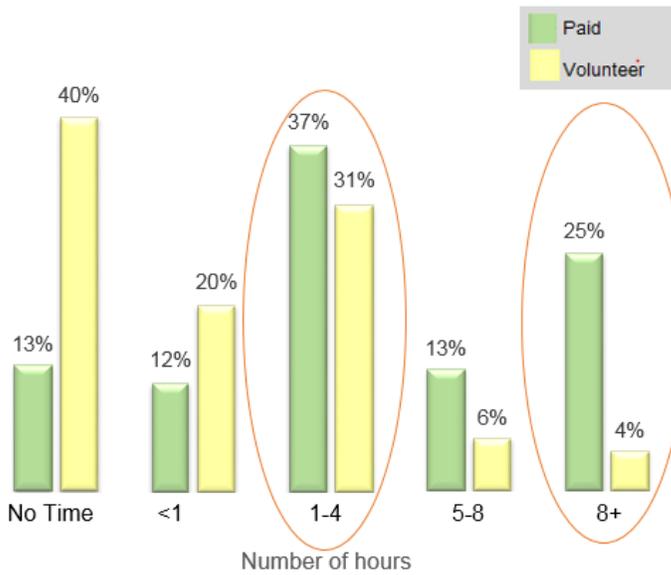
Comments from staff showed high interest in telework and alternative work schedules. Suggested benefits include: reducing traffic, reducing greenhouse emissions and saving energy in buildings.

Staff rating: paid vs. volunteer hours they are
willing to commit to sustainability activities

Participation:

The survey asked leadership and staff about their willingness to participate in agency sustainability activities. The questions asked leadership which topic areas would benefit most from staff time and where they are most willing to support volunteer or paid staff time.

Leadership indicated staffing constraints limit the total time possible to designate for these efforts. Comments indicated that having a budget for staff to work explicitly on sustainability initiatives would affect significantly more change.

Employee willingness to use paid vs. volunteer time shows that there would be significantly more support if able to use paid time. In the middle range of 1-4 hours, employees are near equally willing to offer volunteer or paid time. Anything above 4 hours and paid time appears a necessity. This is contrasted with leadership prioritization.

There was marginal support for allotting 5+ hours a month to sustainability activities (paid or volunteer). The comments from both staff and leadership indicated a strain on existing workloads. The following section describes the areas leadership indicated would benefit most from staff involvement.

Motivators:

When asked what would motivate staff to participate more in agency sustainability efforts they indicated the following as the top three motivators:

1. Ability to use paid staff time to participate
2. Direction from agency leadership
3. More knowledge and training on sustainability opportunities
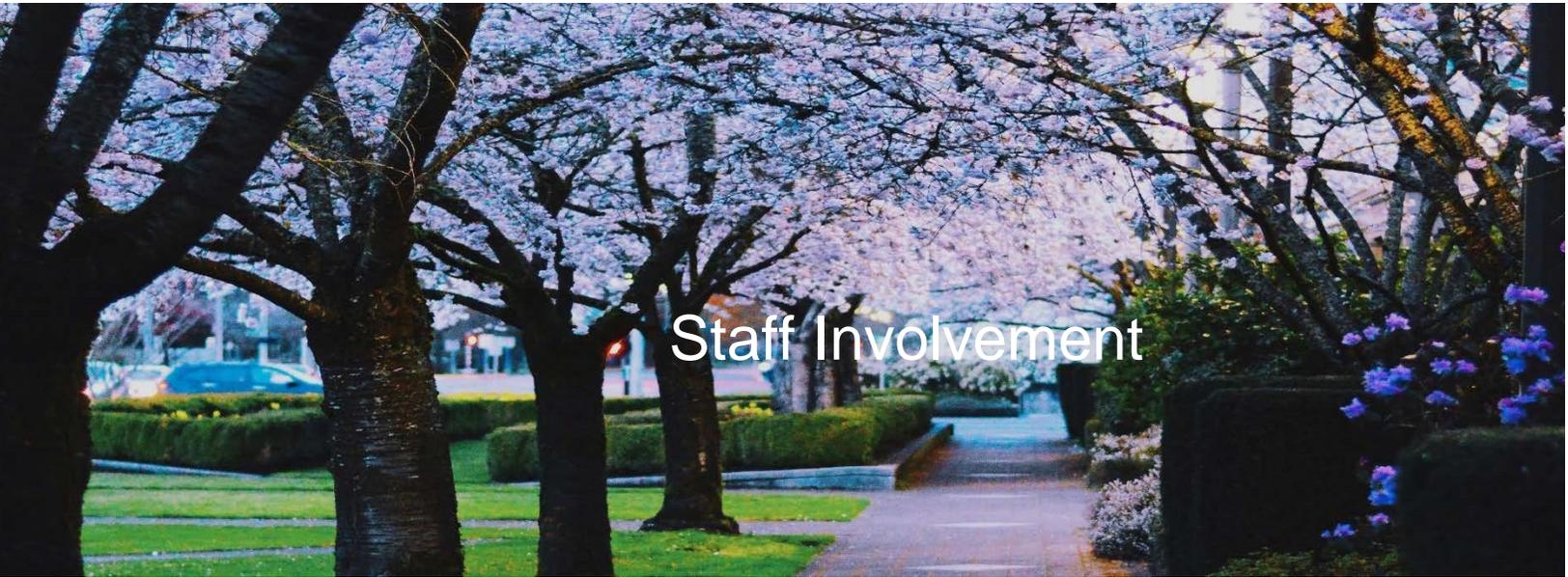
Staff Involvement

Leadership rating: support of paid staff time

Leadership rating: support of paid staff time

Activity	%
Develop / revise an agency sustainability plan	76%
Oversee specific sustainability initiatives (e.g., recycling, energy conservation, etc.)	73%
Collect data on sustainability performance	70%
Participate in an agency sustainability committee / green team	70%
Participate in the Interagency Sustainability Coordinators Network	60%
Attend special sustainability-oriented events	59%

% of Strongly support and somewhat support

Activities:

Ratings from staff and leadership were taken into account regarding interest, benefit, total amount of time staff are willing to volunteer, and total amount of time leadership can commit.

As a result the following areas would likely benefit most from staff involvement:

- Developing / revising an agency sustainability plan
- Overseeing specific sustainability initiatives (e.g. recycling, energy conservation)
- Participating in agency sustainability committees / green teams

With respect to revamping or developing agency sustainability plans, leadership indicated they would approve 8+ hours of staff time a month.

Once the plan is developed/updated, a mix of volunteer / paid time at approximately four hours a month would be supported to sustain continued activities.

Agency Performance

Current Performance:

Leadership was asked to rate their agency's current performance across a range of categories. Equity/diversity and recycling were rated as the top categories for performance among all agencies, but responses varied when looking at agencies by size. There were 11 categories that leadership rated. The following are those that received the highest ratings, broken out by agency size.

1 = Highest **11** = Lowest

Top two performing categories: Medium agencies (100-700 employees)
All agencies

1 -   Promoting equity/diversity   **1 -** Increasing recycling
2 -   Increasing recycling   **2 -** Reducing toxics

Large agencies (>700 employees)   Small agencies (<100 employees)

1 - Promoting equity/diversity   **1 -** Promoting equity/diversity
2 - Increasing recycling   **2 -** Managing natural resources

Leadership indicated efforts in promoting equity/diversity are currently performing well. The narrative comments from staff expressed both questions and insights concerning this topic.

For example, there were questions about sufficiently defining this topic area. It is currently either unclear or too broad a definition to identify strategies and measurable goals around equity and diversity efforts. Some comments identified a need to either develop or sustain a community/culture of sustainability at the agency level.

Agency Performance

Current Performance (continued):

Of the 11 categories that leadership rated, the following are those that receive the lowest ratings broken out by agency size.

1 = Highest **11** = Lowest

Lowest performing categories:

All agencies

8 - Reducing fossil fuel use from the agency fleet
9 - Reducing greenhouse gas emissions
10 - Increasing resiliency to climate change
11 - Conserving water

Large agencies (>700 employees)

8 - Increasing resiliency to climate change
9 - Reducing greenhouse gas emissions
10 - Reducing fossil fuel use form agency fleet
11 - Conserving water

Medium agencies (100-700 employees)

8 - Increasing resiliency to climate change
9 - Reducing fossil fuel use form agency fleet
10 - Procuring of goods and services
11 - Conserving water

Small agencies (<100 employees)

8 - Conserving water
9 - Reducing fossil fuel use from agency fleet
10 - Procuring of goods and services
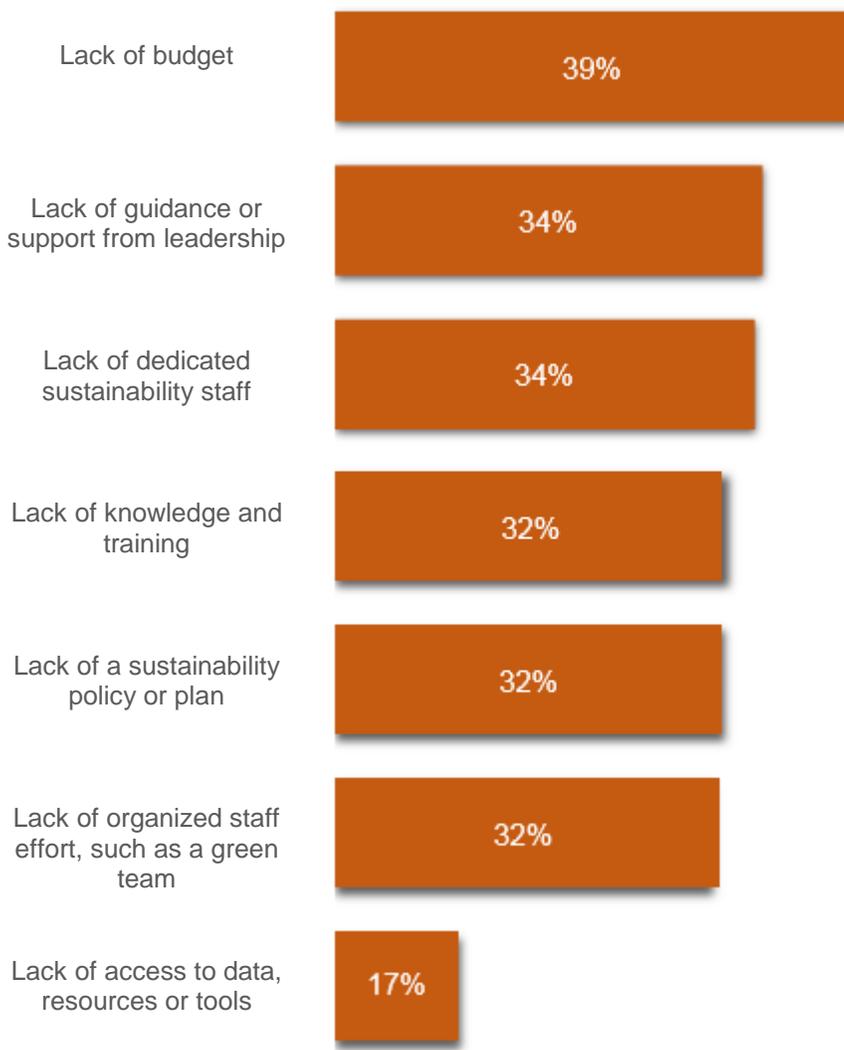**11 -** Increasing resiliency to climate change

Current Barriers

Staff rating: significant barriers to practicing sustainability

Barrier	%
Lack of budget	39%
Lack of guidance or support from leadership	34%
Lack of dedicated sustainability staff	34%
Lack of knowledge and training	32%
Lack of a sustainability policy or plan	32%
Lack of organized staff effort, such as a green team	32%
Lack of access to data, resources or tools	17%

% rating significant barrier

Current barriers:

Staff identified current barriers to sustainability performance: high short- term costs (budget) and lack of perceived guidance or support from leadership.

Barriers remain mostly the same across agencies of all sizes. One exception is that large agencies also ranked knowledge and training as a significant barrier.

Comments:

Staff comments echoed the quantitative results and shed light on how these areas affect sustainability activities within the agencies. Lack of guidance and support from leadership leave staff feeling a disconnect between staff actions and the agency vision. For some larger agencies, staff expressed a willingness to participate and integrate sustainable practices but noted that the culture of sustainability is not established. Staff commented that a vision, consistent communication, and clear and attainable goals would help address this.
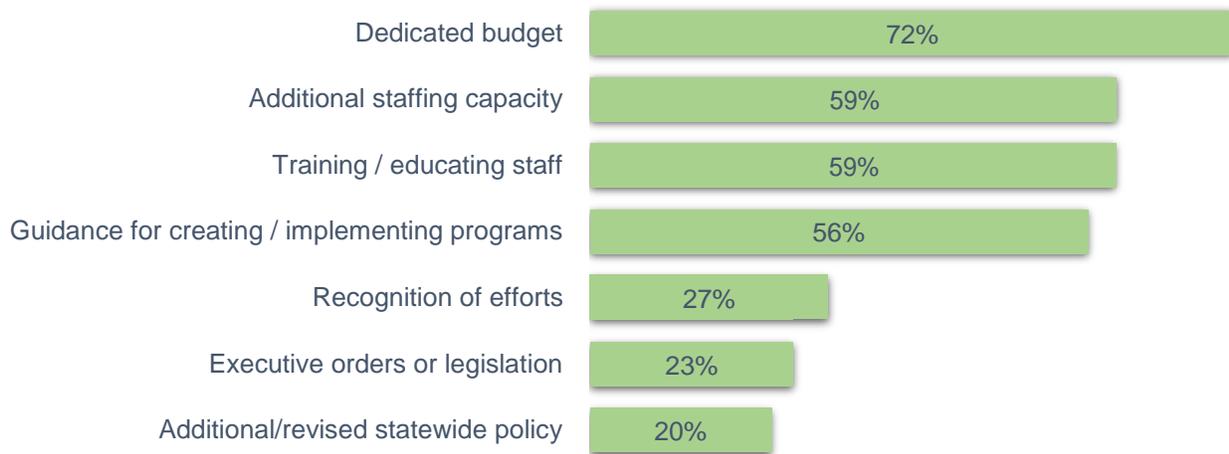
Opportunities for support:

When asked what areas would benefit most from additional support, leaderships' ratings mirrored the barriers identified by staff.

Leadership rating: areas for additional support

|	
Dedicated budget	72%
Additional staffing capacity	59%
Training / educating staff	59%
Guidance for creating / implementing programs	56%
Recognition of efforts	27%
Executive orders or legislation	23%
Additional/revised statewide policy	20%

% rating very beneficial or extremely beneficial

Communication:

Staff indicated that the most effective ways to learn about sustainability efforts are through the following outlets:

- State government sustainability-specific newsletter
- Staff meetings
- Trainings
- Agency green teams
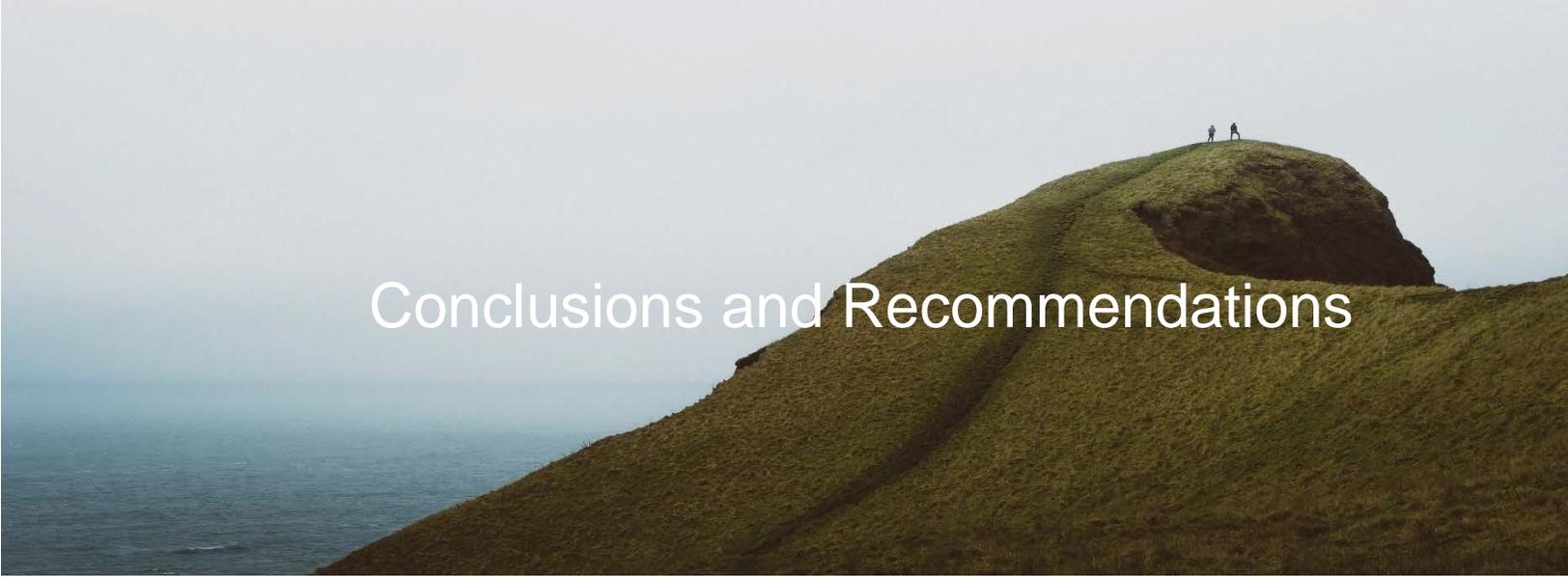
Conclusions and Recommendations

Survey results indicate both positive trends in the form of strong support for sustainability among leadership and staff – but also some significant opportunities to further agency sustainability efforts. Some specific conclusions and recommendations:

- Staff are interested in more knowledge about what their agencies are doing with respect to sustainability. Agency sustainability coordinators are encouraged to partner with their communications staff to increase messaging and disseminate sustainability news and progress. The DAS Sustainability Program can help provide content for agencies to push to staff, as well as communication tips and ideas.

- With the convening of a Governor's Climate Cabinet and state Carbon Policy Office, the timing is right to close current climate literacy gaps among leadership and staff across the enterprise. Leaders from natural resources agencies, who already perceive climate change and sustainability as high priorities, can help in this effort. Given climate change is a priority of the Governor, the Board recommends additional messaging, training and knowledge development on the impacts of climate change to agency operations, and the importance of both mitigation and resilience.

- Leaders and staff were well aligned in perceived benefits of sustainability. Preparing and adapting for the future – a key tenet in climate change adaptation – was seen as the greatest benefit. The Board recommends that this theme be integrated into agency climate change knowledge development and training efforts, as well as overall adaptive resiliency of agencies.

- Leaders indicate that their agencies are addressing equity/inclusion. While this topic represents a social dimension of sustainability, respondents acknowledged that it is broad and not as commonly affiliated with sustainability compared to environmental sustainability topics. The Board suggests further effort would be beneficial to both define and measure these aspects of sustainability.

- Leadership responses point to an opportunity to further support agency work in the areas of climate change and fleet. Agencies are starting to integrate climate change into their sustainability plans, and to track metrics such as greenhouse gas (GHG) emissions. It is recommended that the Sustainability Board and the Global Warming Commission work collaboratively to assist agencies in these efforts. DAS Fleet and Parking Services already calculates GHG emissions associated with state fleet vehicles – this data provides a good foundation for such efforts.

- Staff are willing to participate in agency sustainability efforts – small amounts as volunteers, substantially more time if paid. Leaders support allowing staff paid time to participate in sustainability efforts – up to four hours per month, but up to 8 hours for developing initial sustainability plans. This suggests the chance for agencies to provide more specific guidance to staff on when or how they can participate on paid time. The Board recommends that agencies support staff paid time during normal work hours, and that this is communicated through human resources policies or other similar mechanisms.

- The Board recommends that agency leadership/executive teams explicitly support sustainability efforts. This could include integrating sustainability into agency strategic plans, messaging from leadership to staff in agency communications (e.g. internal newsletters), developing an agency sustainability policy and having leadership actively engaged in sustainability plans (development and presentations to the Board).

- While staffing and budgeting are perceived as limitations, sustainability efforts often lead to cost savings and efficiencies. The Board recommends agencies apply life-cycle analysis to evaluate both up-front and long-term costs and savings, and explore capturing and re-investing savings from sustainability into new sustainability efforts. Specific support for agency sustainability efforts can be integrated into existing position descriptions, noting that sustainability doesn't need to be an "add on" effort, but rather can be reflected as helping existing staff integrate sustainability principles into their work.

- Beyond managing buildings efficiently, leaders expressed integrating sustainability into agency program/decisions as a high priority, along with staff education and training. The Board can support development of decision support tools and guidance to help agencies with programmatic sustainability efforts

APPENDIX C: Board and ISCN Correspondence, Sustainability Plan Guidelines

Memorandum

July 27, 2018

To: John Miller, Chair, Oregon Sustainability Board

From: Interagency Sustainability Coordinators Network Dave Wortman, Statewide Sustainability Officer, DAS

Re: Board Guidelines for Agency Sustainability Plans

In 2013 the Oregon Sustainability Board (OSB) developed the document entitled, "State Agency Sustainability Plan Updates," providing guidance for agencies to create or update their sustainability plans. This document was developed based on 2013 direction in a letter from the Governor's Office that called on the OSB to "measure and support progress at state agencies", and to "review(ing) agency sustainability plans by meeting with agency staff to discuss plans and execution". Among other elements, the Guidelines include sections on plan requirements, and plan elements (mission, goals, internal and external practices and policies). A separate but related one-page document provides agencies a template for reporting on statewide metrics.

In the six years since these guidelines were developed, changes in state government provide an opportunity to review and revise them. Governor Kate Brown has different priorities with respect to sustainability than her predecessor. The Governor has signed executive orders on energy and climate change, as well as water conservation and equity. Agency staff and leadership has changed in many cases, leading to different agency approaches to sustainability. Finally, agencies have additional experience and insights to offer, having prepared and/or revised sustainability plans under the 2013 Guidelines.

In early 2018, the ISCN dedicated a work session to reviewing and discussing the Guidelines. This included breakout sessions to discuss what in the current Guidelines was working, what could be improved upon and what the Board may wish to add or remove. The ISCN provides the following suggestions for the next generation of sustainability plan guidelines.

What to Keep from Current Guidance

- Core sustainability plan documents should be concise and make use of bulleted lists.
- Agencies should continue to describe what sustainability means to them and how it fits with their mission and/or strategic plan.
- Maintain general guidance directing agencies to include short-term goals and longer-term stretch goals, along with strategies to meet goals.
- Continue to document both internal and external practices and goals.
- Identify specific metrics to measure success.
- Maintain the general idea of collaboration among agencies, and with Board members.

Opportunities to Revise Guidance

- The five-page limit is short for agencies that have extensive and specific actionable items; ISCN suggests agencies emphasize brevity, but that they be provided some flexibility on length. Extra material can also be placed in appendices.
- Update specific content guidance on short and longer-term goals to align with the latest executive orders and related statewide policy (e.g., align goals with Governor's goals on energy, water, climate, etc.).
- Consider helping agencies in conducting a "materiality analysis" to determine their areas of greatest impact, control and opportunity – e.g. internal operations, external programs or specific functional areas.
- Consider providing flexibility in reporting requirements based on agency size/complexity and capacity of staff (e.g. does the agency have a sustainability coordinator?). Larger and more complex agencies have more resources to track metrics and pursue complex strategies compared to smaller agencies and boards.

Opportunities to Add to Guidance

- Include a section that discusses the scope of an agency's authority; for example, the Military Department has both federal and state requirements related to sustainability. Agencies that receive federal funds have specific federal goals that must be addressed in addition to Oregon goals.
- Frequency of reporting to OSB might be more meaningful if plans are updated every five years, but then agencies could update the Board on implementation progress in interim years. This would encourage agencies to be accountable for actually making progress toward goals, monitoring metrics and completing specific actions.
- For presentations to the Board, it would be helpful if agencies knew ahead of time if there were specific questions or areas of interest. That way, presentations could be tailored to answer Board questions.
- Foster cross-agency collaboration on sustainability – this would help agencies working on similar issues, such as executive order compliance, to collaborate and avoid redundant efforts.
- Provide a section on when/how to update plans, and how to proceed with implementation. What are some best practices agencies can employ to sustain the sustainability?
- Specify who from the agency should approve the plan internally, and who should present to the Board. Emphasize the importance of senior-level management.
- Include education and communication efforts, and how agencies can engage employees in plan development and implementation.

Delete from Guidance

- Pull out the discussion of budget narrative from plan guidance; two years ago, agencies were told they no longer have to report out on those guidelines in their plans once it was part of an agency budget.

Other Ideas

- Explore building stronger relationships between OSB members, agencies and plan partners. Pair Board members with agencies so agencies have a Board mentor advocate who can assist in responding to questions that come up during the meeting because they know how an agency operates. This would give agencies an on-going connection and intersections with new areas.
- Provide specific but simple guidance on how to collect data on key metrics. Revise the statewide metrics template to include revised guidance on water, waste, fleets, climate, procurement and other data points.

Suggested Outline for Revised Agency Guidance Document

1. Why sustainability?
2. History of sustainability in Oregon state government
3. Why develop a strategy or plan? (requirements and benefits)
4. Overview of the process: plan-do-check-act (create a living document)
5. Conduct a materiality analysis
   a. What does sustainability mean for your agency
   b. Identify areas of greatest impact to scope your plan
   c. Characterizing operational impacts
   d. Characterizing programmatic impacts
6. Summarize current impacts and practices
7. Engage your staff
   a. Newsletters
   b. Idea boxes
   c. Focus groups
   d. Steering committee
   e. Pop up events/open house over lunch
   f. Surveys
8. Cross check against executive orders and statewide policy, and use plan as a vehicle to address them
9. Develop a sustainability vision, mission and/or guiding principles as appropriate to your agency's culture
10. Create short-term and long-term goals
    a. Reference current goals in EOs, other legislation or key drivers
11. Create strategies/action to support goals
12. Map goals and strategies to metrics
    a. ODOE building energy scorecard
    b. OWRD water resources reporting
    c. DAS fleet fuel and GHG emissions records
    d. Waste- estimating diversion rate
    e. GHG emissions – The Climate Registry CRIS
    f. Programmatic impacts
    g. Equity, Diversity and Inclusion
13. Lay out an implementation plan along with tracking progress, sharing results and updating the plan (who, what and when)
14. Appendices:
    a. Staff survey template
    b. Links to EOs and statewide policies
    c. Link to agency plans web page

Oregon Sustainability Board

Governor's Sustainability Office 900 Court St, NE, Ste. 160
Salem, OR 97301
503-378-6460

September 10, 2018

To: Interagency Sustainability Coordinators Network (ISCN) From: Oregon Sustainability Board

Re: Agency Sustainability Plan Guidelines Members of the ISCN:

Thank you for your excellent July 27, 2018 memorandum providing suggestions for updating the "State Agency Sustainability Plan Updates" document. This document has informed agency sustainability plan development since it was written in 2013. As you acknowledge - and the Board agrees - changes in state government leadership and priorities provide an opportunity to revisit and revise this document. The Board discussed your suggestions at its August 2018 meeting and provides below some more detailed response. We greatly appreciate your thoughtful suggestions and agree with most of them as received.

What to keep from current guidance: The Board agrees with the ISCN feedback on what to keep from the current guidance. Specifically, plans should remain concise, but they should continue to link sustainability to the agency's mission and strategic plan. Agencies should pursue both short- and long- term goals, evaluating both internal operations as well as external-facing programs, and strive to measure success with specific metrics.

Opportunities to revise guidance: The Board largely concurs with the ISCN on opportunities to revise guidance and appreciates the flexibility agencies seek in structuring their plans based on size, levels of complexity and other factors. At its last meeting the Board discussed the idea of a "smart sheet" to help agencies scope out areas of greatest impact, control and opportunity.

Opportunities to add to guidance: The ISCN provides several suggestions, many of which the Board supports. These include articulating an agency's authority (e.g., other federal considerations), focusing on plan implementation in updates to the Board and including education and communication.

To foster dialogue between agencies and the Board, we suggest that agencies scheduled to present to the Board submit materials two weeks in advance. This will allow more Board member time to review documents and prepare specific questions, providing agencies a better sense of Board questions and areas of interest. Providing concise summaries of, " what' s changed" - such as a summary matrix of updates or implementation progress - would also expedite the Board' s review effort.

We also agree that senior agency leadership should be involved, from signing off on plans to participating in Board presentations. The Board also strongly encourages ISCN members to work with their leadership to address sustainability in the agency's strategic plans.

Other ideas: The Board is committed to supporting agencies as they develop their plans. We hope the next iteration of plan guidance will provide renewed direction and tools. While we appreciate the idea of pairing Board members with agencies as mentors, we must also balance our Board duties with other commitments. Alternatively, we suggest Board members serve as an on-call resource for agencies, particular ly in each Board member ' s area of expertise, should agencies have specific questions .

As a next step, we propose to work with the DAS Sustainability Officer and the Governor's Office to develop revised plan guidelines. In addition to the points raised by the ISCN, we are also examining how best to integrate equity and inclusion as well as climate into future guidelines. We understand that the guidelines must be relevant and workable for agencies, and we will keep you updated and engaged as we make progress.

Respectfully,

John Miller, Chair
Oregon Sustainability Board

Attachment: Suggested guidance document outline

APPENDIX D: Material Footprinting Case studies

EXCEL DRYER
gaining competitive advantage through product life cycle assessment

Excel Dryer, the first hand dryer manufacturer to commission a comparative product life cycle assessment of high-speed energy-efficient hand dryers, now evaluates the performance of its XLERATOR® Hand Dryer following the new Product Category Rules published by UL Environment.

THE ISSUE

For over 50 years, Excel Dryer, Inc. has been manufacturing American made hand dryers and invented the original, patented XLERATOR® Hand Dryer. XLERATOR created the high-speed, energy-efficient hand dryer category, redefining the public perception of hand dryers and setting a new standard for performance, reliability and sustainability.

The hand dryer market, like so many others, has seen the environmental performance of products become a key point of market competition, and as a result has seen a variety of "green" claims being made over the past decade. While the XLERATOR Hand Dryer was determined to be a leader in energy-efficiency among electric hand dryers, based on the results of a peer reviewed life cycle assessment (LCA), neither the environmental benefits nor its scale over the full life cycle of the product were apparent. Additionally, it was not clear how the XLERATOR compared to hand drying alternatives such as virgin or 100 percent recycled paper towels.

THE SOLUTION

To quantify benefits of the XLERATOR, Excel Dryer became the first hand dryer company to commission an independent LCA of high speed hand dryers, which was peer reviewed to ISO 14040 standards. The end goal was to share credible, third-party testing results with consumers and the specifying community to substantiate environmental claims of their XLERATOR Hand Dryer.

The LCA compared the high-speed, energy-efficient XLERATOR Hand Dryer to a conventional electric hand dryer and paper towels containing between zero and 100 percent recycled content. The LCA examined a broad range of environmental impacts at all stages of the product life cycle including all material, energy inputs and pollutant outputs.

Each system was evaluated to determine the environmental impact of providing 10 years of service (drying 260,000 pairs of hands). This was understandably a lengthy process and significant commitment of time, money and staff resources.

The LCA confirmed the XLERATOR Hand Dryer reduces the carbon footprint of hand drying substantially versus even 100 percent recycled paper towels.

"People generally believe that recycled anything is the greenest solution, which often isn't true," said Penny Bonda, LEED fellow with the U.S. Green Building Council, a partner with Ecoimpact Consulting and past president of the American Society of Interior Designers. "Product and material specification becomes easier, almost intuitive, once the design professional understands the LCA process and the vital role it plays in green design."

THE CHALLENGES

AVOIDING 'GREENWASHING'

With so much information being disseminated, it became increasingly important for buyers and specifiers to understand and gain access to reporting tools and benchmarks to authenticate claims relative to environmental impacts and product performance. A champion for innovation and change, Excel Dryer recognized that in order to provide clarity and prevent 'greenwashing' in the sustainable product sector, the method to test for environmental impact of hand dryers needed to be standardized.

NEED FOR STANDARDIZATION

To that end, Excel Dryer again reached out to a credible internationally recognized third party, UL Environment (a business division of Underwriters' Laboratories), to create Product Category Rules (PCR) for the hand dryer industry globally. Excel Dryer was selected to chair the PCR committee and work with other industry leaders to create industry consensus per ISO standards.

TRANSPARENCY

The newly published PCR was the first global PCR published by any industry. It included industry consensus guidelines that specify how a hand dryer's performance is to be tested for energy use and dry times, both key components to properly reporting their environmental impacts. Third-party testing to these guidelines levels the playing field and creates an apples-to-apples comparison of hand dryers allowing consumers and specifiers to make more informed decisions. This new PCR ushers the hand dryer industry into a new 'age of transparency.'

"I'm proud to be an American manufacturer of quality products people enjoy using and can depend on," said Excel Dryer President, Denis Gagnon. "If we make a claim about environmental sustainability, we back it up with credible, third-party testing results."

What's a PCR?

Product Category Rules (PCR), is a set of specific rules that are peer-reviewed, and offer scientifically supported guidance specifying the way a product LCA ought to be carried out given the nuances of that product category. A PCR is a prerequisite for a product Environmental Product Declaration (EPD), which is a concise, highly readable format for easily communicating the environmental performance of a product. EPDs are increasingly used in purchasing decisions.

RESULTS

Just as they did in 2009, Excel Dryer again called upon the help of a third-party consultancy to refresh the LCA of their XLERATOR Hand Dryer, as well as new models that have been released since 2009 — this time to apply the product-specific guidance put forth in the hand dryer PCR. This effort is expected to be completed in 2017.

Excel Dryer understands that a coordinated approach to green restroom design is one that uses the most up-to-date high-efficiency products to reduce energy usage, conserve water, save money and contribute to a better environment overall.

BENEFITS

With this holistic and environmentally focused approach, Excel Dryer will continue to be an innovator and champion for change, leading the industry by example.

Materials Management Grant Focus Area

Introduction

The Department of Environmental Quality's (DEQ) Materials Management Program funds projects that support Oregon's 2050 Vision for sustainable materials management. Since 1991, DEQ has awarded over $9 million in materials management grants. Project grants are for any project that reduces waste generation, promotes reuse, or recovers solid waste through recycling, composting or anaerobic digestion.

Focus Area: Partnerships involving Community-Based Organizations (CBOs)

This year, the Grant Program aims to foster new partnerships between CBOs and environmental organizations in Oregon.

- Focus points will be given to projects involving two or more organizations where materials management outcomes would assist a local community in Oregon. The implementation must also include extensive involvement from a CBO that is representative of or has successfully served the target community. Applicant must demonstrate that the project would foster or establish a new partnership with a CBO (e.g., a partnership formed January 1, 2016 or later).
- Projects that fall within this focus area can earn additional focus points if the applicant or CBO has never received an award from the Materials Management Grant Program.

Definitions

Community-Based Organizations (CBOs)
For the purposes of the focus area, a CBO is defined as an incorporated non-profit organization (including, but not limited to, environmental justice networks, faith based organizations, grassroots level regional advocacy groups and representatives of the business community); and tribal governments and tribal organizations of the federally recognized nine tribes in Oregon. Other groups may be considered depending on the focus of the project.

CBO Involvement
Extensive involvement of a CBO means that the CBO is involved in several actions or stages of the development and implementation of the project. Merely having the CBO submit a general letter of support stating that the project is a good idea will not be sufficient to be considered for focus points.

New Partnership
To be considered for focus points, applicants partnering with a CBO can demonstrate that the partnership was formed within the last three years by submitting a letter signed by both parties affirming that the parties have not previously worked together on a contract before January 1, 2016, or other documentation affirming this statement.

State of Oregon
Department of Environmental Quality

Land Quality
700 NE Multnomah St.
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Phone: 503-229-5446
Contact: Marie Diodati
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www.oregon.gov/DEQ

DEQ is a leader in restoring, maintaining and enhancing the quality of Oregon's air, land and water.

HP
finds life cycle assessment lends credibility to the environmental benefits of small batch digital printing

Small batch digital printing enables consumer packaged goods brands to respond to rapid market changes and stand out on the retail shelf. HP's use of life cycle assessment demonstrates that small batch digital printing offers environmental benefits as well.

THE ISSUE

In the world of consumer flexible packaging for everything from dried peanuts to moist tofu, the text, images and logos had always been printed with analog technologies, which require either engraved cylinders or plates for each color separation of print images. Such technologies make good sense for large print jobs that don't require frequent changes—ones in which economies of scale really pay off.

But what about smaller print batches, or ones where many customized designs are needed? Consumer packaged goods (CPG) brands and retailers are under the pressure of dynamic change in consumer trends and are redesigning their processes to allow more flexibility and customization to meet the demands of shoppers. The CPG industry demands more agile, flexible printing technologies to bring down printing costs for small print batches and also seeks new ways to interact with consumers through their packaging.

HP seized this opportunity and in 2014 introduced a new technology to the

flexible packaging market—the Indigo 20000 Digital Press. This press proved financially beneficial for not only smaller print jobs with quick turnaround but also enabled variable data printing for creating new flexible packaging applications that had not existed before, complementing analog technologies, which remain preferable for large print jobs.
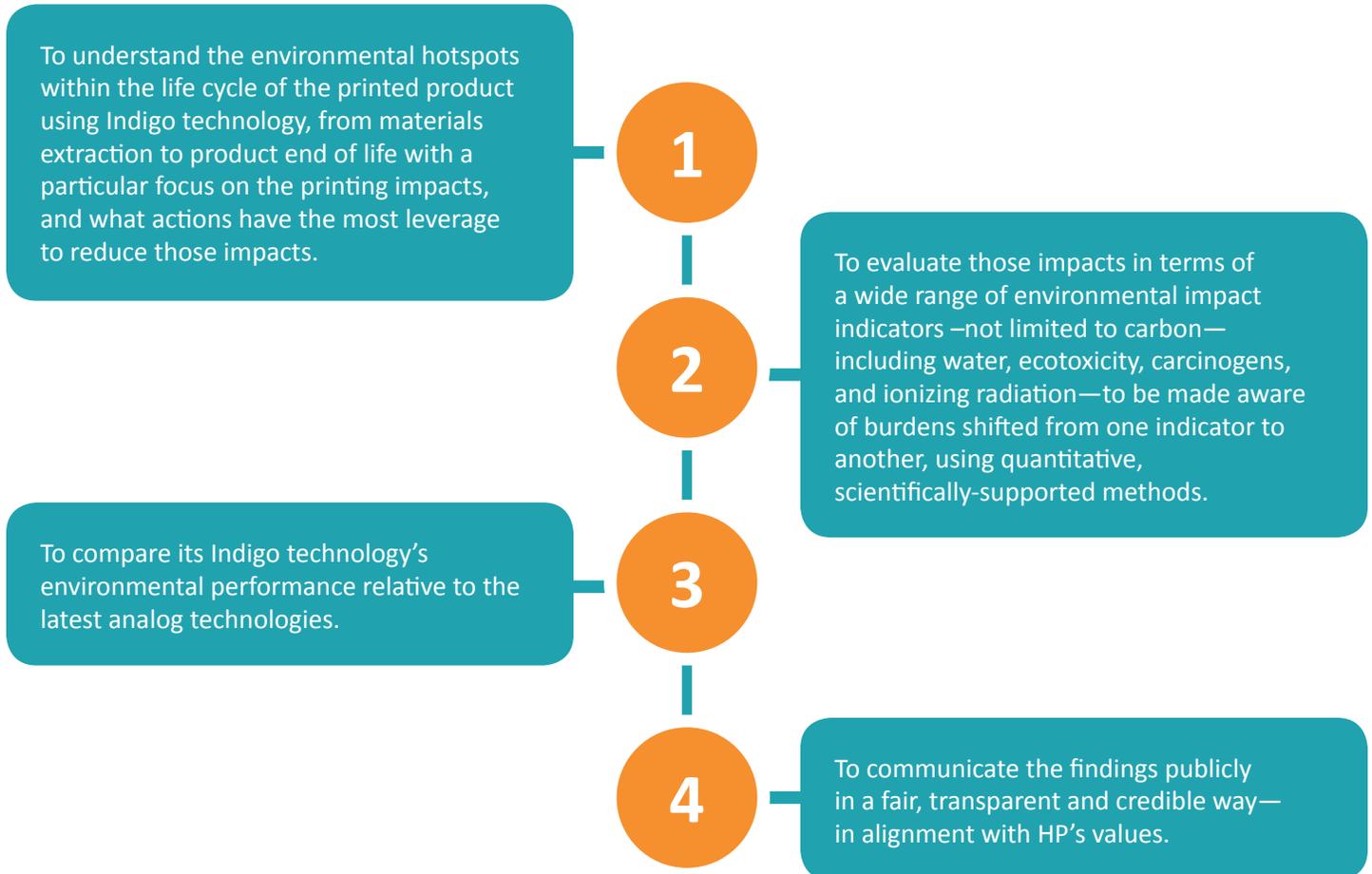
HP's marketing team could easily substantiate the financial benefits to its customers for using this small-batch technology. But what about the environmental performance benefits? The marketing team had a strong inclination that there were environmental benefits to be communicated, but it wanted a sound, credible, thorough message—a powerful, positive marketing message to deliver to that audience.

Examples of printed flexible packaging (aka pouches)

GOALS

In deciding to conduct a life cycle assessment (LCA), HP had its sights set on the following goals:

1 To understand the environmental hotspots within the life cycle of the printed product using Indigo technology, from materials extraction to product end of life with a particular focus on the printing impacts, and what actions have the most leverage to reduce those impacts.

2 To evaluate those impacts in terms of a wide range of environmental impact indicators –not limited to carbon— including water, ecotoxicity, carcinogens, and ionizing radiation—to be made aware of burdens shifted from one indicator to another, using quantitative, scientifically-supported methods.

3 To compare its Indigo technology's environmental performance relative to the latest analog technologies.

4 To communicate the findings publicly in a fair, transparent and credible way—in alignment with HP's values.

THE SOLUTION

The vision amounted to a comparative assertion LCA, which was carried out in alignment with ISO-14040/14044 standards. The criteria include review by a third-party panel and stringent guidelines to help ensure fairness in the comparison. Carrying out this type of project allows the findings to be communicated to the public in a credible way.

THE CHALLENGES

COST

Carrying out a comparative assertion LCA can be expensive in terms of money and time—a lot of data needs to be collected, familiarity with life cycle inventories and methods is needed, and a peer review must be supported—so HP decided to start small to gain more certainty about their technology's environmental performance.

HP did some in-house calculations using information from its manufacturing team and some publicly available information for the competing technologies and came up with some positive preliminary results.

HP recognized that working with detailed environmental data and analysis was outside their core competency and hence engaged a qualified consultant early to guide the process.

With specialized help engaged, HP was able to validate the likely outcomes and then implement a complete LCA that would conform to the ISO 14040/14044 standards.

DATA

One of the biggest challenges of the study lay in finding reliable data, particularly for energy use, for the alternative technologies. HP overcame that challenge by seeking the advice of an expert specialized in those technologies to provide the most current information available. By including such an expert in analog printing technology in the review panel, they were able to further ensure that all systems were fairly represented in the assessment.

ANALYSIS

HP found it challenging to summarize all of the interesting findings from the LCA—from ozone depletion to water consumption, which results do you communicate without obfuscating any information? HP addressed this by focusing on the key drivers of impact and putting the results into the context of its customers—which environmental indicators are important and relevant to them? HP polled its customers and reviewed general industry information to determine the subset of the information which had the most meaning to its key audience.

INTERPRETATION

HP recognized the importance of doing the LCA right. HP wanted a fair comparison that accurately reflected the technologies and the best available science. Careful interpretation and communication of the results was key to aligning the messaging with HP's leadership in transparent sustainability disclosure. To this end, HP found it very important to develop and provide long-term knowledge and support to respond to ongoing customer and public inquiries about the work.

RESULTS

The LCA results confirmed what HP had speculated: as print job sizes increase, the setup impacts per print job decrease, and at job sizes smaller than 10,000 m², digital technology provides lower potential impacts for many of the indicators evaluated including global warming potential, water depletion and energy demand.

For very large print jobs, analog prints make sense both financially and environmentally. Therefore, the right solution depends on the printing goals. HP was able to quantify this "cross-over point" at which analog becomes preferable to digital. HP was happy to conclude that there was enough room in the market for both analog and digital printing technologies.
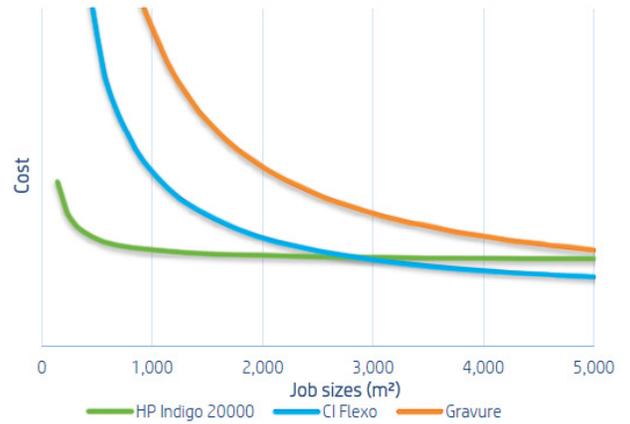
Cumulative Energy Demand per pouch varying print job size (Europe)
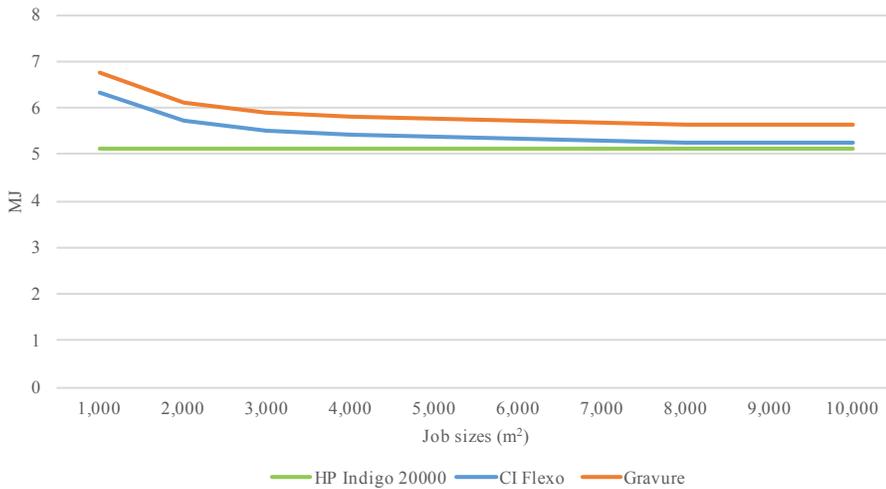
Coffee pouch's cost (top) and cumulative energy demand (left) performance using HP Indigo 20000 Digital Press and analog printing (Reproduced from HP's Press White Paper 2016). As print size grows, analog print costs and environmental performance together make it competitive with digital prints.

THE BENEFITS

Although financial benefits cannot yet be tracked to this project directly, the learnings from the LCA have helped inform the way HP designs the printing press, which help its customers reduce environmental impacts during the printer's use stage. These actions have given HP a competitive advantage. HP is able to market this superior environmental performance as part of its branding as a sustainability leader.

HP was also able to leverage the work to engage in direct conversations with customers, strengthening those relationships for the long term. This work is just one more brick in the foundation of HP's sustainability reporting, environmental transparency and brand image.

IMPOSSIBLE FOODS
explores possibilities of better burgers through life cycle assessment

Impossible Foods' use of an internally developed and externally reviewed life cycle assessment (LCA) helps them understand the impact and resource use along the supply chain of its flagship product, credibly communicate with customers, and help drive select business decisions. In addition to their own product LCA, Impossible Foods uses LCA results from the academic literature to quantify sustainability and resource use trends within the existing US food system.

THE ISSUE

Impossible Foods, a producer of plant-based alternatives to meat and dairy products, has a mission to help transform the global food system by providing a way to reduce the environmental impacts of animal product consumption. They pursue this mission through food technology innovations in taste, texture and more.

Their flagship product is a plant-based burger made from ingredients such as coconut oil, textured vegetable protein and potato protein. Since beef is one of the most resource intensive components of global diets, Impossible Foods needed a robust internal understanding of the environmental impacts of food ingredients and processes on water, land and the climate, for both their product and that of beef.

They and their customers are interested in understanding how their products perform relative to animal-based products, and the key drivers of environmental impacts. For its flagship plant-based burger product, clear and credible environmental messages are expected to further motivate consumers beyond the taste experience to seek out its product as an environmentally preferable option.

THE SOLUTION

Because providing environmentally-friendly food choices is core to its mission, Impossible Foods knew from the start they'd commit to maintaining an up-to-date and rigorous LCA of its products.

They began by internally performing a farm-to-factory LCA of its Impossible Burger product to understand its impacts and hotspots, as well as its comparison to ground beef. They had this LCA externally reviewed to ensure the quality of the information before communicating the findings publicly. A farm-to-factory boundary was selected as it is expected to be equivalent for the beef comparison for the outbound distribution stage.

After first constructing an assessment in spreadsheets using data from multiple open-source LCA tools, they moved their modeling to a professional LCA software to ensure the quality and consistency of data used, and to more thoroughly explore the findings.

They saw investing in a professional software and learning to use it as a step that would help them fully integrate the insights from LCA into both their product development and also their marketing and communications, as well as present new opportunities for use of product environmental footprinting, or LCA, in business decisions. Separate from their product LCA, Impossible Foods made use

of existing published LCAs in the academic literature to understand the resource use and environmental impacts of animal agriculture production systems (for instance, resource use variability among region, product, and by conventional, grass fed, and organic systems).

In some cases, both the LCA software and the academic literature for product LCA have been useful in providing context for business decisions. For example, in assessing environmental burdens associated with different sources of plant-based fats, they used the default data in their software to develop an initial assessment, which was then refined through a broader literature review of the available information on the production systems associated with the different ingredients in their product.

They found that the impact information available for many of these ingredients tell part of the environmental story, but require additional context from other data sources such as scientific literature and statistics from the Food and Agriculture Organization of the United Nations (FAOSTAT). That understanding informs not only the 'why' behind the product but also the means to improve their environmental performance by identifying hotspots in production and supply chains.

THE CHALLENGES

Due to the mission (and branding) of Impossible Foods and its flagship product, environmental footprinting was a necessity, and their leaders provided full support. As a fairly young start-up offering plant-based alternatives to meat, footprinting established performance benchmarks and demonstrated credibility.

COST

The initial inventory and assessment was developed internally, by employees who specialize in LCA. However, in terms of staff time, costs of software license and consulting support, that process could be perceived as labor and resource-intensive. The inventory stage of data collection required bandwidth not just from the company's sustainability practitioners but from all operations-owners across the company, including manufacturing, R&D, and facilities, as their expertise was required in model development.

For example, Impossible Foods uses a novel fermentation method to develop 'heme,' a key ingredient that functions as an analog to the myoglobin found in meat. Commercial-scale fermentation has general parameters for energy requirements, but each system is very different, and those collecting the life cycle inventory data worked closely with engineers to model the process based on launch-scale energy requirements of yeast culture.

As such, the time required by multiple parties was significant, but this may not be a concern for companies wishing to footprint a product with a more ubiquitous and well-documented set of ingredients/inputs.

RESOLUTION

Impossible Foods chose to hire consultants to perform a review of its internally developed LCA to identify inconsistencies or gaps, and to transition the model from Excel to professional software.

This review helps lay the groundwork for a future ISO-compliant audit: ISO compliant LCAs go through multiple rounds of peer review, and entail significantly more time and resources. Impossible Foods plans on pursuing ISO compliance for the LCA in the future, when the bill of materials, processes, and commercial production partners are less subject to change. The future peer-reviewed LCA is not expected to deviate significantly from the current reviewed results, but is expected to refine understanding of impacts and hotspots within the supply chain.

Impossible Foods first engaged an independent consultant for support and eventually opted to engage a well known LCA consulting group at a higher price point. Based on their experience, Impossible Foods found that expertise, location, cost, and time constraints are the main criteria for choosing between an independent consultant and a larger firm when undertaking an LCA study.

THE ADVICE

Impossible Foods has provided the following advice for companies considering taking on product environmental footprinting:

" For companies tackling LCA independently/internally: read lots of industry reports and journal articles. For those engaging in footprinting through partnering with sustainability consultants: read lots of journal articles, and ask lots of questions!

The consultants are a valuable source of expertise—methodologies and theory behind the various footprinting protocols are dynamic and specific, and company staff should understand those frameworks prior to trying to communicate results or make product comparisons. "

" We would recommend that all companies attempt to understand their respective environmental impacts and improve them accordingly. However, fully reviewed and vetted environmental footprinting spanning multiple metrics (not just carbon) can be a big-ticket-expense for small and medium size companies.

Development of a LCA should be undertaken with clear sense for how the results will be leveraged in marketing, vendor relations, and establishment of benchmarks and future environmental performance goals. Start small, and give your staff lots of time.

Begin building a life cycle inventory long before any marketing or branding needs necessitate the process, and build the inventory with the intent of understanding baseline performance as a starting point for future improvement. "

" We chose to begin our sustainability consulting vendor relationship with an additive approach, beginning with our internal LCA and pursuing rigorous independent review, while building core competency in LCA in-house. Once our bill of materials and supply chains become less fluid, we are likely to embark on a full ISO compliance process for our LCA with our sustainability consulting partners. "

" In initiating our review process, vendor selection was a top consideration. The sustainability consulting industry hosts a multitude of excellent groups, and selecting the right vendor is tough. After meeting with a number of potential sustainability partners, we selected a vendor based on body of work (focus on food footprinting), engagement with and initiatives in the quantified sustainability community, and their ability to meet our ambitious pre-product launch review deadline.

For those operating under tight communications deadlines, geographic location of consultants might be a consideration, as real-time responses across large time zone gaps may have proved challenging in our particular case. "

" Finally, for companies interested in making use of footprinting results in marketing: engagement between marketing/communications and footprint developers is key. No model is perfect, and footprinting procedures should be communicated with the understanding that variation in results is inevitable and the footprint is simply an estimate of real physical and energy flows—contingent on modeling assumptions, assessment methods selected, and real-time changes in bills of materials and supply chains. "

THE BENEFITS

The flagship product was only very recently launched, so direct economic benefits thus far aren't possible to assess. But Impossible Foods has already found value in the ability to communicate the relative sustainability of the product to customers and investors, and knowledge of impact-areas within their production practices.

They are looking for opportunities to integrate this knowledge more closely in further developments of the Impossible Burger as well as in new product development. Knowledge of impact-areas/hotspots has also been critical for future growth strategy and in determining optimal facility design for future scale-up (for example, planning for reduced electricity demand by conceptualizing co-generation facilities, grid alternatives, and various forms of energy reclamation techniques, particularly for fermentation processes).

Expected economic benefits resulting from this footprinting work and outreach are reduced expenses within their direct operational control and supply chain, enhanced brand recognition, increased communication with customers resulting in sales growth, vetting performance of future products, and the ability to answer customer requests for data.

The environmental benefits include reducing the impact of their own production and suppliers' practices based on learnings from the study and helping consumers select and use environmentally preferable products.